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# PCT

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| (51) International Patent Classification 6 :<br><br>H04M 3/42, 3/00, 3/50 | **A1** | (11) International Publication Number:     **WO 98/07266**<br><br>(43) International Publication Date:    19 February 1998 (19.02.98) |

<table>
<tr>
<td>

(21) International Application Number:    PCT/CA97/00570

(22) International Filing Date:     14 August 1997 (14.08.97)

(30) Priority Data:<br>
   60/023.903      14 August 1996 (14.08.96)    US

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(81) Designated States: CA, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

**Published**
*With international search report.*
*Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

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(54) Title: INTERNET-BASED TELEPHONE CALL MANAGER

(57) Abstract

A method is provided that allows data access service provider subscribers to manage their telephone service through a data connection. The subscriber is enabled to obtain call data information and is provided real-time control. During a data call, a visual incoming call indicator informs the subscriber, through a pop-up window, connected to the data access service provider that there is a call attempt. A visual message waiting indicator allows a subscriber, connected to the data access service provider to be notified of a pending message on the voice message system. A visual call disposition allows the subscriber, through the data connection, to dispose of calls. The call disposition options include forwarding a call to voice mail, playing an announcement to the calling party, forwarding the call to another line, sending a text message which could be converted to speech using text to speech technology, answering the call using voice over data call or terminating the data connection in order to accept the call.

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# INTERNET-BASED TELEPHONE CALL MANAGER

## Field Of The Invention

5          The present invention relates to handling
telephone related messages during data communications
sessions.

## Background To The Invention

10         As a result of the increasing popularity of the
Internet and the World Wide Web, more and more users stay
connected to their Internet service provider, mainly
through dial-up modem connections, for durations well
exceeding the average holding time for voice calls (3
15   minutes). During these calls, the call waiting indicator
is usually disabled since the tone generated by this
feature would disrupt the data stream. Since the Internet
session in most cases occupies the only telephone line in
the house, the subscriber is neither able to detect nor
20   respond to a call attempt.

## Summary Of The Invention

           It is an object of the present invention to
provide improved telephone call handling during data
25   communication sessions.
           According to one aspect of the present invention
there is provided a method of providing an indication of an
incoming call to a called station coupled to a
telecommunications network, the called station having a
30   data processing terminal engaged in a data call with a data
communications network, the data call being through a
connection in the telecommunications network to an access
gateway for the data network, the method comprising the
steps of providing a signal advising of the incoming call
35   from the access gateway, over the data call connection
through the telecommunications network, to the data
processing terminal and generating by the data processing

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terminal, responsive to receiving the signal, an incoming
call indication.

     According to another aspect of the present
invention there is provided a method of providing an
5    indication of a message waiting at a voice messaging
service to a called station coupled to a telecommunications
network, the called station having a data processing
terminal engaged in a data call with a data communications
network, the data call being through a connection in the
10   telecommunications network to an access gateway for the
data network, the method comprising the steps of providing,
by the telecommunications network, an incoming call
intended for the called station to a voice messaging
service whereby the incoming call may record a message,
15   providing a signal advising of the message waiting from the
access gateway, over the data call connection through the
telecommunications network, to the data processing terminal
and generating by the data processing terminal, responsive
to receipt of the signal, the message waiting indication.
20        According to a further aspect of the present
invention there is provided a method of disposing of an
incoming call intended for a called station coupled to a
telecommunications network, the called station having a
data processing terminal engaged in a data call with a data
25   communications network, the data call being through a
connection in the telecommunications network to an access
gateway for the data network, the method comprising the
steps of holding call processing of the incoming call at a
switching system in the telecommunications network,
30   providing a signal advising of the incoming call from the
access gateway, over the data call connection through the
telecommunications network, to the data processing
terminal, receiving from the data processing terminal, via
the access gateway, instructions for disposing of the
35   incoming call and continuing the call processing of the
incoming call at the switching system according to the
received instructions.

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According to an additional aspect of the present
invention there is provided a system for interconnecting a
telecommunications network and a data communications
network, comprising a telecommunications gateway and a data
5    network gateway adapted to interface the telecommunications
network and the data network, one or more stations coupled
to the telecommunications network, each station having a
data terminal and a telephone terminal, means for
recognizing, responsive to an incoming call being directed
10   to a particular station, that the data terminal of the
particular station has a data call connection through the
telecommunications network to the data network and means
for signalling information relating to the incoming call
from the telecommunications network, via the
15   telecommunications and data network gateways, over the data
call connection to the data terminal of the particular
calling station.

According to a still further aspect of the present
invention there is provided a method of managing telephone
20   service to a called station coupled to a telecommunications
network while the called station is engaged in a data call,
the method comprising the steps of providing a message
indicative of an incoming call to the called station via
the data call, accepting a message from the called station
25   via the data call and disposing of the incoming call in
response to the accepted message.

The present invention has the advantage of
allowing a subscriber to monitor and control telephone
services while engaged in a data call, via the data call.

30       The basic concept behind the present invention is
to combine the Public Switched Telephone Network (PSTN) and
the Internet service providers' enhanced signalling and
data communication capabilities to provide incoming call
information and control to an Internet subscriber. With
35   the Internet Call Manager, the subscriber is informed of
call attempts and can dispose of the call as deemed
appropriate. Furthermore, subscribers connected by modem

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cannot check if they have pending messages without
terminating their session.  The visual message waiting
indicator allows them to be informed of their mailbox
status within their Internet session.

5

Terminology and acronyms
   • Caller
      Person that calls the subscriber.  The caller can reach
      the subscriber in two ways, either directly, i.e., the
10    caller dials the subscriber's DN, or indirectly, i.e.,
      the caller dials a DN that is forwarded to the
      subscriber's DN.
   • Data Access Service Provider (DASP)
      Data network operator that sells access services to its
15    data network that allows the subscribers to communicate
      through the DASP's network and other data networks.
   • DASP user
      Person that subscribes to and uses DASP services.
   • Forwarding from station number (FF)
20    Parameter conveyed over the control between the PSTN and
      the VMS system and used by the VMS system as the mailbox
      identifier.
   • Subscriber
      A DASP user that subscribes also to the Call Manager
25    service.
   • VMS subscriber
      Person that subscribes to a VMS.


Acronyms
30  • BRI - Basic Rate Interface
   • CPE - Customer Premise Equipment
   • DASP - Data Access Service Provided
   • DN - Directory Number
   • ICM - Internet Call Manager
35  • ISDN - Integrated Services Digital Network
   • ISP - Internet Service Provider
   • MWI - Message Waiting Indicator

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- . PSTN - Public Switched Telecommunication Network
- SMDI - Simplified Message Desk Interface
- SS7 - Signalling System #7
- VMS - Voice Messaging Service
5  • VMS-SP - VMS Service Provider


        An advantage of the method of the present
invention is allowing data access service providers (DASP)
subscribers to manage their telephone service through their
10 · DASP connection.  The subscriber can obtain call data
information and provides real time call control.
        The service in accordance with an embodiment of
the present invention has the following components.
        A Visual Incoming.Call Indicator (VICI) informs a
15  subscriber through a popup window connected to the DASP
that there is a call attempt.  When available the user
could be provided with the CLID and the calling name.
Another version of this feature could inform the subscriber
of a call attempt through Email.
20            A Visual Message Waiting Indicator (VMWI) allows a
subscriber connected to the DASP to be notified of pending
message on the VMS through a convenient screen display.
        A Visual Call Disposition (VCD) allows the
subscriber through the DASP connection to dispose of the
25  calls following a visual incoming call indication.  The
subscriber can optionally:
- forward the call to voice mail
- play an announcement (perhaps personalized)
- forward the call to another line
30 • send a text message which would be read using text to
    speech technology
- answer the call using voice over Internet
- terminate or park the Internet connection and take the
    call.
35        A method in accordance with the present invention
introduces the concept of combining the Public Switched

Telephone Network (PSTN) and Data Access Service Provider
(DASP) enhanced signalling and data communication
capabilities to provide incoming call information and
control to a DASP subscriber.

5          In the following descriptions, specific instances
of the PSTN enhanced signalling capabilities are used for
the purpose of describing the concept. However, those
skilled in the art will recognize that the scope of this
invention is not limited to these specific instances. To

10    ease description, functional call flows are used.
Brief Description Of The Drawings

          The present invention will be further understood
from the following description with reference to the
drawings in which:

15          Fig. 1 illustrates an overview of a network in
which the method in accordance with the present invention
can be used;

          Figs. 2 and 3 graphically illustrate the call-
indication functional flow in accordance with another

20    embodiment of the present invention;

          Fig. 4 graphically illustrates the call-indication
functional flow in accordance with a further embodiment;

          Fig. 5 graphically illustrates the message waiting
indication functional flow in accordance with a further

25    embodiment of the present invention;

          Fig. 6 graphically illustrates the message waiting
indication functional flow in accordance with an additional
embodiment of the present invention;

          Figs. 7 and 8 graphically illustrate the incoming

30    call disposition functional flow in accordance with a still
further embodiment of the present invention.
Detailed Description

          Referring to Fig. 1 there is provided a view of
the network components and interfaces required by this

35    method. The network components are grouped into four (4)
domains, i.e., the PSTN domain, the DASP domain, the Voice
Message Service - Service Provider (VMS-SP) domain and the

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Customer Premise Equipment (CPE) domain. The PSTN domain
network components are the SS7-capable telecommunication
switches, labelled Service Switching Point (SST)[1, 2, 3],
the Public Switched Telephone Network, labelled PSTN [5],
5   the PSTN Gateway Agent, labelled GA [19] and the PSTN
gateway, labelled PSTN-G[4]. The DASP domain network
components are the DASP gateway, labelled DASP-G[7] and the
DASP data network [6]. The VMS-P[11] and the VMS gateway,
labelled VMS-G[12]. For conciseness, the VMS gateway [5]
10  is shown as being part of the VMS-SP domain. However,
depending on the implementation, the VMS gateway [5]
component may be outside of the VMS-SP domain and be part
of the PSTN domain. The CPE domain components are the
caller's telephone [10], the DASP subscriber's telephone
15  [9] and computer [8] and the CPE gateway, labelled CPE-G
[18].

In Fig. 1, interfaces [9, 10, 11, 12, 13, 20],
shown as direct link between network components and
functions, illustrate the logical relationships between
20  these components and functions and as such, have no
implications on the physical paths, either direct of
indirect, and signalling supports used in the different
implementations of this invention.

The PSTN gateway (PSTN-G) [4] is the PSTN
25  component that implements the PSTN-DASP signalling.
Through interface [12], the PSTN gateway provides the DASP
gateway with the incoming call indication and control for
all registered subscribers [17]. Via interface [11], the
PSTN gateway mediates with the other PSTN network
30  components, including but not limited to the SSPs [1, 2,
3], the PSTN Gateway Agent [19] through interface [20] and
the VMS-SP's VMS gateway [5] through interface [13], to
obtain the incoming call information, the MWI information
and to remotely control call establishment in the case of
35  call disposition service, for incoming calls to subscriber
[17].

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The PSTN Gateway Agent (GA) [19] is the PSTN component that provides the PSTN-G [4] with the incoming call information and remote call control for incoming calls to registered subscribers [17].

The VMS-SP's VMS gateway's (VMS-G) [5] responsibility is to provide the PSTN gateway [4] with the MWI information for registered subscribers [17].

The DASP gateway (DASP-G) [6] is the DASP component that implements the PSTN-DASP signalling. Through interface [12], the DASP gateway obtains from the PSTN gateway [4] the incoming call indication and control for all registered subscribers [17]. The main responsibility of the DASP gateway is then to mediate, through interface [9], DASP data network [8] and interface [10], with the subscriber's [17]. For call disposition service, the CPE gateway receives the subscriber's inputs from the HMI and translates the call disposition request in the appropriate message format for delivery to the DASP gateway [6].

The above components can be implemented in various ways. A single component can be implemented as a stand-alone network equipment, multiple components can be combined in a single network equipment or a given component can be partitioned over two (2) or more network equipments.

In the following sections, methods and systems are described which implement the service components of this invention, namely, call indication, MWI delivery and call disposition. However, the scope of this invention is not limited to these implementations, which are merely illustrative. Finally, for each service component, a specific service scenario issued for simplicity of description only. The invention is not limited to these service scenarios.

The following data is used in the functional flows:

- caller's DN is Dnc
- caller's name is Name_c

- subscriber's DN is Dns
- subscriber's Name is Name_s
- DASP gateway's DN is Dng (where applicable)
- VMS's DN is Dnv.

5

Incoming call indication

     Referring to Figs. 2 and 3 there is provided a
detailed functional flow for a specific implementation of
the call indication service component. The following

10  service scenario is used in the functional flow for
description purposes only, the method not being limited to
this service scenario:

- the subscriber subscribes to a VMS
- the subscriber's telephone line is busy due to a dial-up

15    data session to the DASP.

- all calls are interswitch.

     In this implementation of the invention, the
GA[19] is implemented using the AIN call model on SSP[2].
The PSTN-G[4] component could be implemented in many ways,

20  including but not limited to an Advanced Intelligent
Network (AIN) Service Control Point (SCP) an SS7 protocol
analyzer and an SS7 mediation point. The PSTN signalling
capabilities used are the Signalling System #7 (SS7)
Transaction Capability Application Part (TCAP) as

25  interfaces [11], [12] and [20].

     The AIN call model GA [19] at the subscriber's
[17] SSP [2] is used to detect incoming calls to
subscriber's DN, using, for example, the AIN
Termination_Attempt trigger. It communicates with the

30  PSTN-G[4] using the SS7-based AIN SSP-t-SCP protocol as
interfaces [11] and [20]. Upon incoming call to subscriber
[17], the SSP [2] AIN Termination_Attempt trigger gets
fired and sends incoming call information, including the
caller's [15] DN and name, to the PSTN-G[4], using, for

35  example, the AIN Termination_Attempt message, in which case
the PSTN-G[4] could answer with an Authorize_Termination

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message. The PSTN-G[4] can then provide the DASP-G[6] with
the required incoming call indication information. The
DASP G[6], through a standard data communication protocol,
including but not limited to TCP/IP, HTTP and FTP,
5    communicates the information to the CPE-G[18]. This
information is then formatted and displayed to the user.

The terms used are:

- TA:    AIN Termination_Attempt trigger
10   - TA:    AIN Termination_Attempt SSP-SCP message
- A_T:   AIN Authorize_Termination SCP-SSP message
- IAM:   SS7 ISUP Initial Address Message
- ACM:   SS7 ISUP Address Complete Message
- ANM:   SS7 ISUP Answer Message
15   - FF:    SMDI Forwarded From number
- CdPN:  Called Party Number parameter
- CgPN:  Calling Party Number parameter
- CgName: Calling Party Name parameter
- OCN:   Originally Called Number parameter
20   - RDI:   Redirecting Indicator parameter
- RDN:   last Redirecting Number parameter
- RgName: Redirecting Name parameter

            Other implementations of this method to deliver
the call indication service component are possible. They
25   include but are not limited to the following one.
Referring to Fig. 4 there is illustrated an embodiment of
the present method. In this implementation of the
invention, the GA[19] is implemented using the SSP-based
[2] Call Forward Busy (CFB) telephony feature, the PSTN[4]
30   component is implemented by a PSTN SSP and the PSTN
signalling capabilities used are:

- the Signalling System #7 (SS7) Integrated Services
  Digital Network User Park (ISUP) as interface [11] and
  [20]
35   - the Integrated Services Data Network - Basic Rate
  interface (ISDN-BRI) as interface [12]

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- . the Simplified Message Desk Interface (SMDI) for PSTN to
    VMS system signalling.
    Terms used are:
- Setup:  ISDN BRI call Setup message
5  - Alert:  ISDN BRI Alert message
- Rel:    ISDN BRI Release message
- CRn     ISDN BRI Call Reference number n
- CFB:    PSTN Call Forward Busy Feature
- CFD:    PSTN Call Forward Don't Answer feature
10 - T_cfd:  CFD timer


Message Waiting Indicator (MWI) delivery
            Referring to Fig. 5, there is illustrated a
detailed functional flow for a specific implementation of
15 the MWI delivery service component.  The following service
scenario is used in the functional flow in Fig. 5 for
description purposes only, the method not being limited to
this service scenario:
- the subscriber subscribes to the VMS
20 - the subscriber's telephone line is busy due to a dial-up
    data session to the DASP.
- all calls are interswitch
- a message for the DASP subscriber [17] has just been left
    at VMS-P[14].
25          In the embodiment of the invention of Fig. 5, the
VMS-G (voice messaging service gateway) [5] is implemented
using the AIN call model on SSP [2].  The PSTN-G [4]
component is as discussed with regard to Figs. 3 and 4.
Incoming call indication, could be implemented in many
30 ways, including but not limited to an AIN Service Control
Point (SCP).  The PSTN signalling capabilities used are the
Signalling System #7 (SS7) Transaction Capability
Application Part (TCAP) as interfaces [11], [12] and [13].
            The AIN non-call associated capability VMS-G [5]
35 at the subscriber's [17] DN.  The PSTN-G[4] and the VMS-
G[5] communicates using the SS7-based AIN SSP-to-SCP

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protocol as interfaces [11] and [13]. A possibility is for
the PSTN-G[4], when an incoming call has been detected
using method described in regard to Figs. 2 and 3.
Incoming call indication, to start a timer set at the
5   subscriber's [17] maximum allowed message length. At time-
out, PSTN-G [4] sends an AIN non-call related Query_Request
to SSP [2] requesting for status of subscriber's [17]
MWI.SSP [2] answers with the AIN Query_Response with an
on/off activation status code parameter. The PSTN-G[4]
10  then provides the DASP-G [6] with the MWI information if
necessary. The DASP-G [6], through a standard data
communication protocol, including but not limited to
TCP/IP, HTTP and FTP, communicates the information to the
CPE-G [18]. This information is then formatted and
15  displayed to the user.


The terms used are:
  • Q_Req: SS7 AIN
  • QUERY_REQUEST SCP-SSP message
20  • Q_Resp: SS7 AIN Query_Response SSP-SCP message
  • P_I:    AIN Provide_Info parameter
  • I_P:    AIN Info-Provided parameter
         Other implementations of this method to delivery
the MWI delivery service component are possible. They
25  include but are not limited to the following one.
Referring to Fig. 6 there is illustrated an additional
embodiment of the present invention, the VMS-G [5]
component is implemented as an SMDI monitoring tool, the
PSTN-G [4] component is implemented by a PSTN SSP and the
30  PSTn signalling capabilities used are:
  • the Signalling System #7 (SS7) Transaction Capability
    Application Part (TCAP) as interfaces [11] and [13]
  • the Integrated Services Data Network - Basic Rate
    Interface (ISDN-BRI) as interface [12]
35  • the Simplified Message Desk Interface (SMDI) for PSTN to
    VMS system signalling.

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It shall be noted here that the parameter content of the TCAP messages used on interfaces 11 and 13 are not standard but adaptation of the NT proprietary TCAP messaging used to convey the MWI information.

The terms used are:
- QwP:    SS7 TCAP Query with Permission package type
- Info:   ISDN BRI Information message
- FI:     ISDN BRI Feature Identification information element
- Incoming call disposition

Referring to Figs. 7 and 8 there is illustrated a detailed functional flow for a specific implementation of the incoming call disposition service component. The following service scenario is used in the functional flow for description purposes only, the method being not limited to this service scenario:
- the subscriber's telephone line is busy due to a dial-up data session to the DASP
- all calls are interswitch
- the subscriber decides to take the call and hence, selects the Take Call call disposition option.

In this implementation of the invention, the GA [19] is implemented using the AIN call model on SSP [2]. The PSTN-G [4] component could be implemented in many ways, including but not limited to an Advanced Intelligent Network (AIN) Service Control Point (SCP). The PSTN signalling capabilities used are the Signalling System #7 (SS7) Transaction Capability Application Part (TCAP) as interfaces [11], [12] and [20].

It shall be noticed that ALL the signalling over interfaces [12] and [9, 10] do not make reference to any existing protocol. It is provided only for sake of clarity of the whole process.

The terms used are:
- IAM:    SS7 ISUP Initial Address Message

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- . TAT:    AIN Termination_Attempt trigger
- T_A:     AIN Termination_Attempt SSP-SCP message
- S_t-R:   AIN Send_To_Resource SCP-SSP message
- C_R_E:   AIN Cancel_Resource_Event SCP-SSP message
5 - R_C:     AIN Resource_Clear SSP-SCP message
- A_T:     AIN Authorize_Termination SCP-SSP message

           As discussed above with regard to Figs. 2 and 3:
Incoming call indication, the AIN call model on SSP [2]
detects incoming calls to subscriber's DN using the
10  Termination_Attempt trigger.  The AIN call model also
provides the remote call control capability required by the
PSTN-G to control call establishment as required by the
call disposition service component.  To prevent situations
where the caller hangs up for waiting too long, the
15  subscriber [17] has a limited time windows (Call_Disp_Timer
expires, a default treatment is provided (e.g., route to
VMS).  Finally, the other options of the call disposition
service component (route to DN, route to VMS, route to
announcement, route to canned messages, ...) can be
20  implemented using the AIN Forward_Call PSTN-G[4] response
to the SSP instead of the Authorize_Termination response.

           Those skilled in the art will recognize that
various modifications and changes could be made to the
invention without departing from the spirit and scope
25  thereof.  It should therefor be understood that the claims
are not to be considered as being limited to the precise
embodiments set forth above, in the absence of specific
limitations directed to each embodiment.

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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1.        A method of providing an indication of an incoming
5    call to a called station coupled to a telecommunications
network, the called station having a data processing
terminal engaged in a data call with a data communications
network, the data call being through a connection in the
telecommunications network to an access gateway for the
10   data network, the method comprising the steps of:
          providing a signal advising of the incoming call
from the access gateway, over the data call connection
through the telecommunications network, to the data
processing terminal; and
15            generating by the data processing terminal,
responsive to receiving the signal, an incoming call
indication.

2.        A method as claimed in claim 1, wherein the signal
20   is a message including information relating to the incoming
call.

3.        A method of providing an indication of a message
waiting at a voice messaging service to a called station
25   coupled to a telecommunications network, the called station
having a data processing terminal engaged in a data call
with a data communications network, the data call being
through a connection in the telecommunications network to
an access gateway for the data network, the method
30   comprising the steps of:
          providing, by the telecommunications network, an
incoming call intended for the called station to a voice
messaging service whereby the incoming call may record a
message;
35            providing a signal advising of the message waiting
from the access gateway, over the data call connection

through the telecommunications network, to the data processing terminal; and

generating by the data processing terminal, responsive to receipt of the signal, the message waiting
5    indication.


4.       A method as claimed in claim 3, wherein the signal is a message including information relating to the incoming call.
10

5.       A method as claimed in claim 4, wherein the message includes information relating to the recorded message.


15   6.       A method of disposing of an incoming call intended for a called station coupled to a telecommunications network, the called station having a data processing terminal engaged in a data call with a data communications network, the data call being through a connection in the
20   telecommunications network to an access gateway for the data network, the method comprising the steps of:

holding call processing of the incoming call at a switching system in the telecommunications network;

providing a signal advising of the incoming call
25   from the access gateway, over the data call connection through the telecommunications network, to the data processing terminal;

receiving from the data processing terminal, via the access gateway, instructions for disposing of the
30   incoming call; and

continuing the call processing of the incoming call at the switching system according to the received instructions.


35   7.       A system for interconnecting a telecommunications network and a data communications network, comprising:

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a telecommunications gateway and a data network
gateway adapted to interface the telecommunications network
and the data network;

one or more stations coupled to the
5    telecommunications network, each station having a data
terminal and a telephone terminal;

means for recognizing, responsive to an incoming
call being directed to a particular station, that the data
terminal of the particular station has a data call
10   connection through the telecommunications network to the
data network; and

means for signalling information relating to the
incoming call from the telecommunications network, via the
telecommunications and data network gateways, over the data
15   call connection to the data terminal of the particular
calling station.


8.       A method of managing telephone service to a called
station coupled to a telecommunications network while the
20   called station is engaged in a data call, the method
comprising the steps of:

providing a message indicative of an incoming call
to the called station via the data call;

accepting a message from the called station via
25   the data call; and

disposing of the incoming call in response to the
accepted message.


9.       A method as claimed in claim 8 wherein the message
30   indicative of an incoming call is an advanced intelligent
network (AIN) message.


10.      A method as claimed in claim 8 wherein the message
indicative of an incoming call is a signalling system #7
35   message.

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11.    A method as claimed in claim 8 wherein the message indicative of an incoming call is an ISDN message.

12.    A method as claimed in claim 8 wherein the message indicative of an incoming call is a call waiting indication.

13.    A method as claimed in claim 8 wherein the message indicative of an incoming call is a voice message indication.

14.    A method as claimed in claim 8 wherein the step of disposing of the incoming call includes forwarding the call to voice mail.

15.    A method as claimed in claim 14 wherein the step of disposing of the incoming call includes playing an announcement to the calling party.

16.    A method as claimed in claim 14 wherein the step of disposing of the incoming call includes forwarding the call to another line.

17.    A method as claimed in claim 14 wherein the step of disposing of the incoming call includes sending a text message.

18.    A method as claimed in claim 14 wherein the step of disposing of the incoming call includes answering the call using voice over the data call.

19.    A method as claimed in claim 14 wherein the step of disposing of the incoming call includes terminating the data call and accepting the incoming call.

20.     A method as claimed in claim 14 wherein the step
of disposing of the incoming call includes parking the data
call and accepting the incoming call.
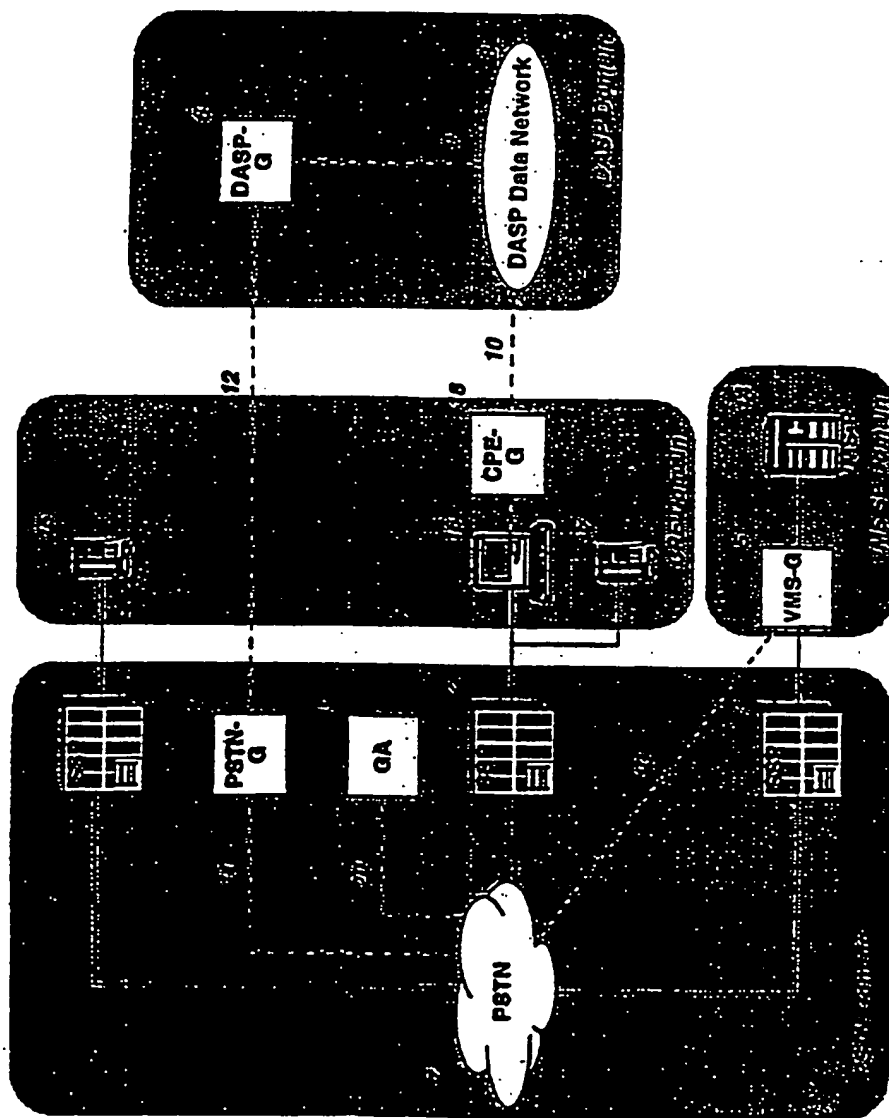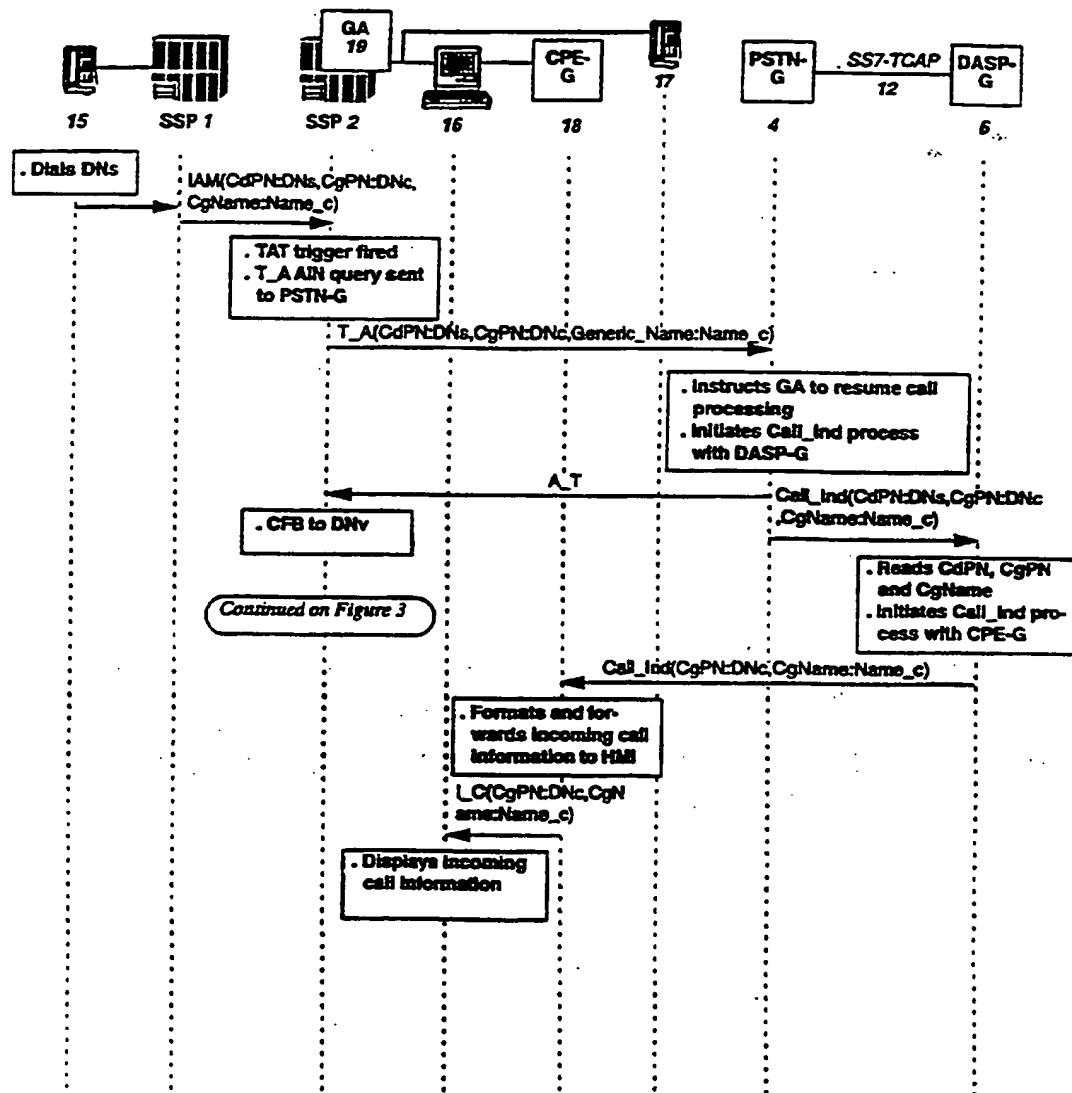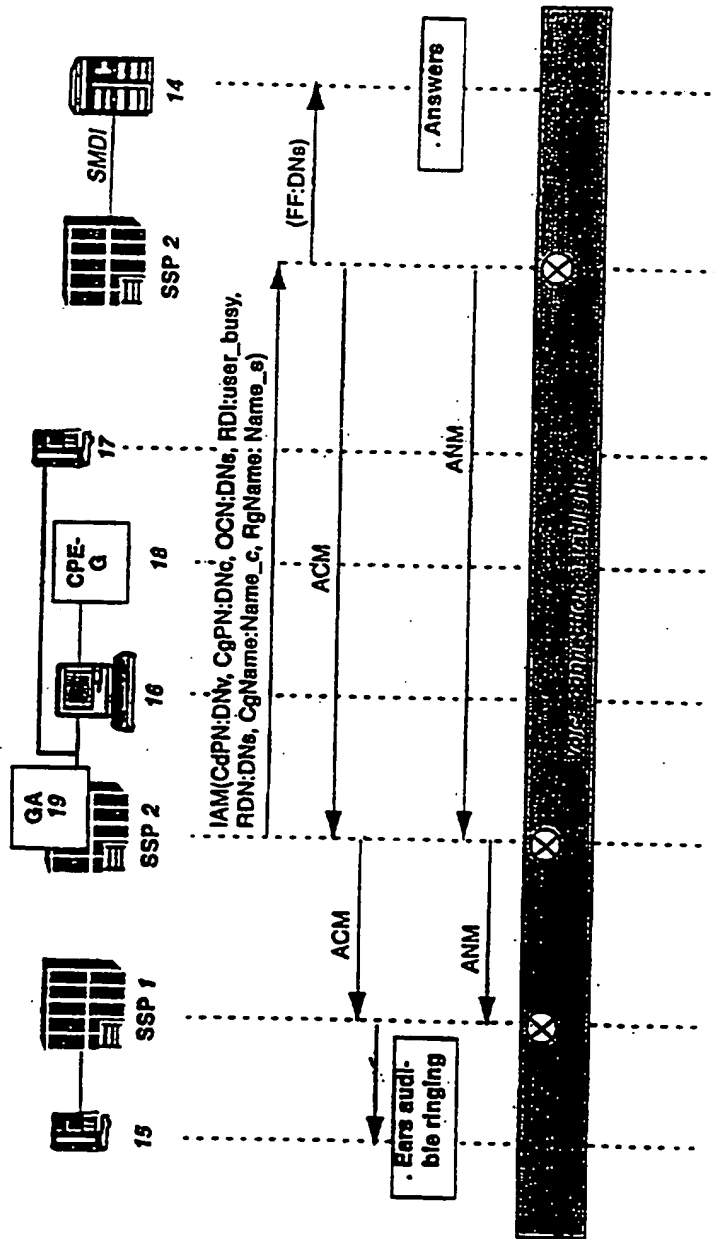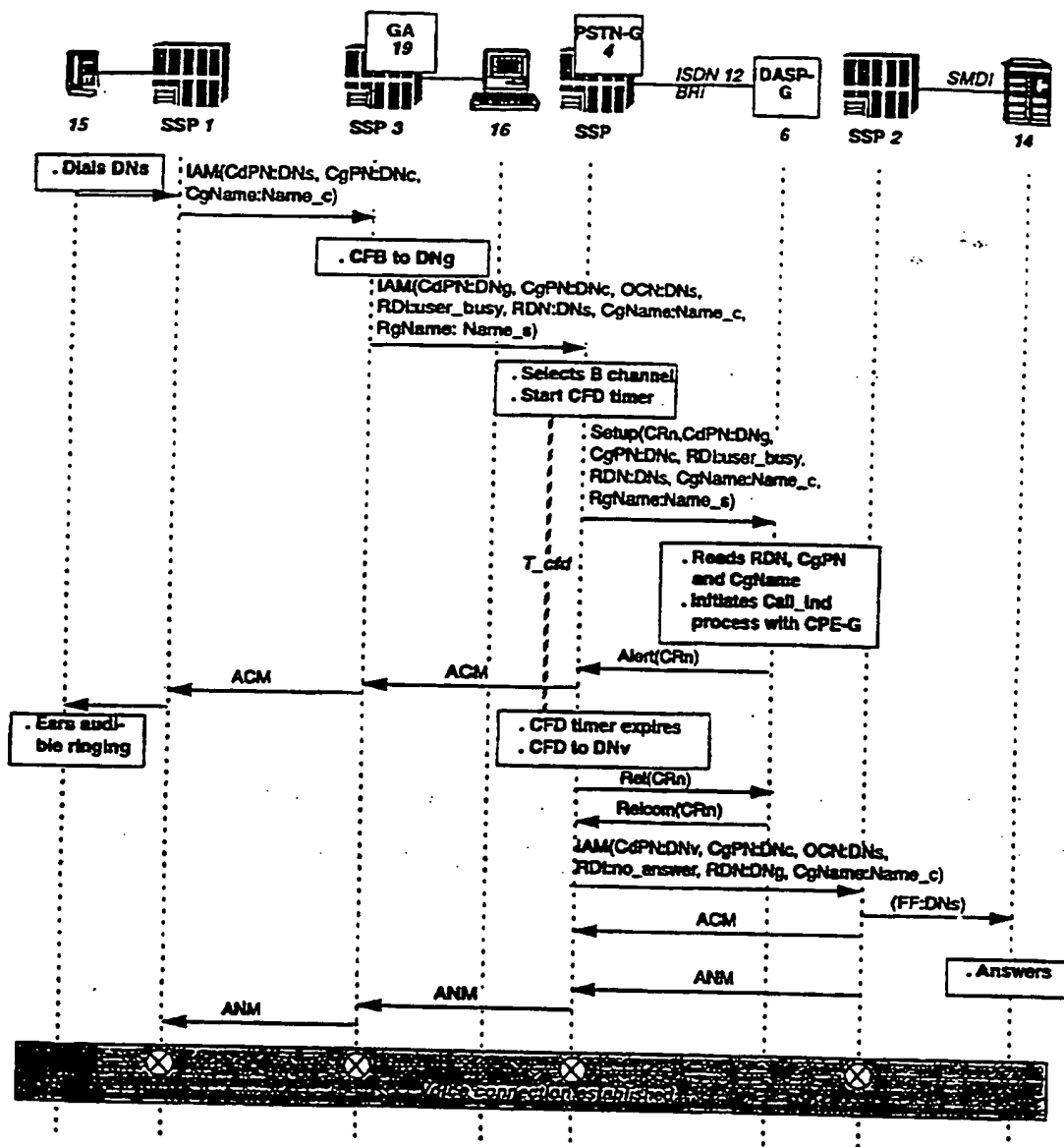
**FIGURE 1**

FIGURE 2
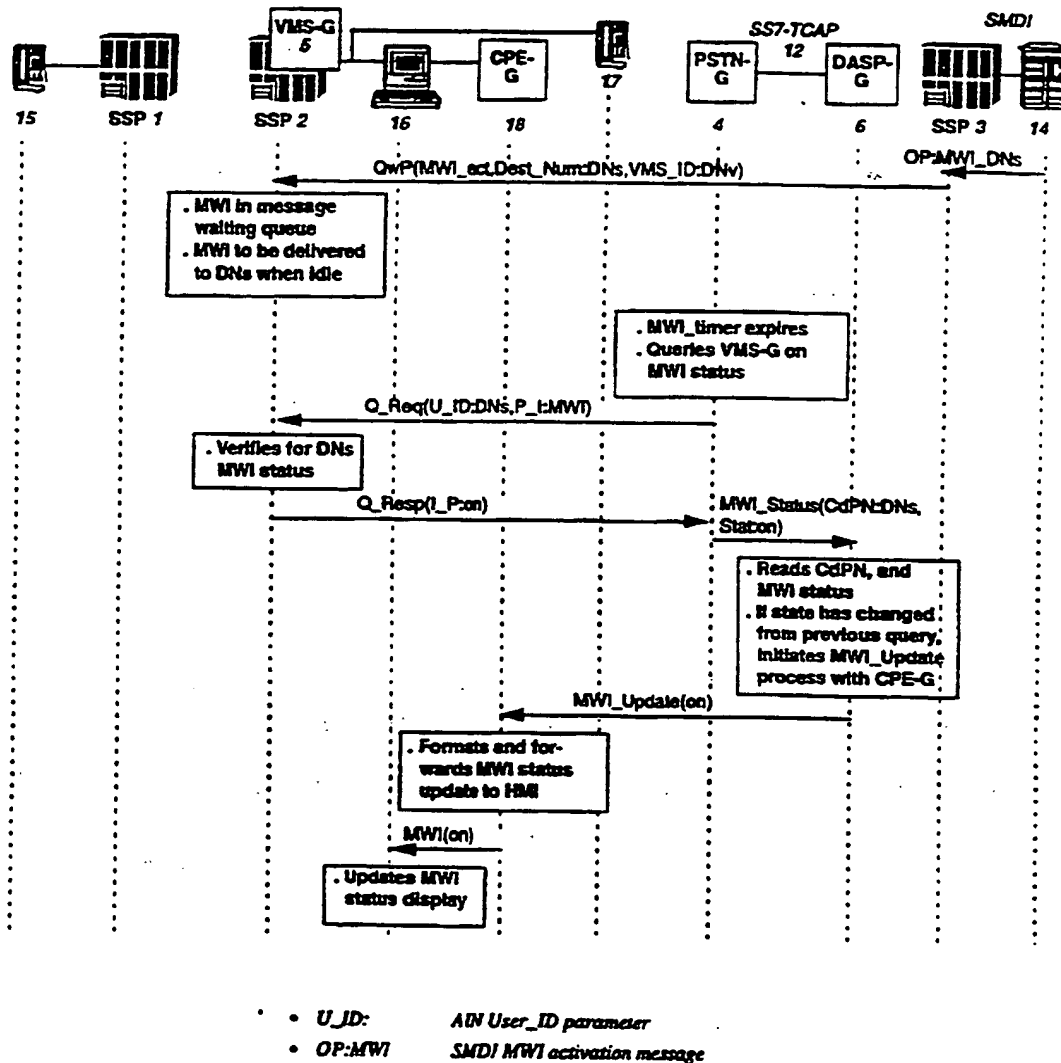
FIGURE 3
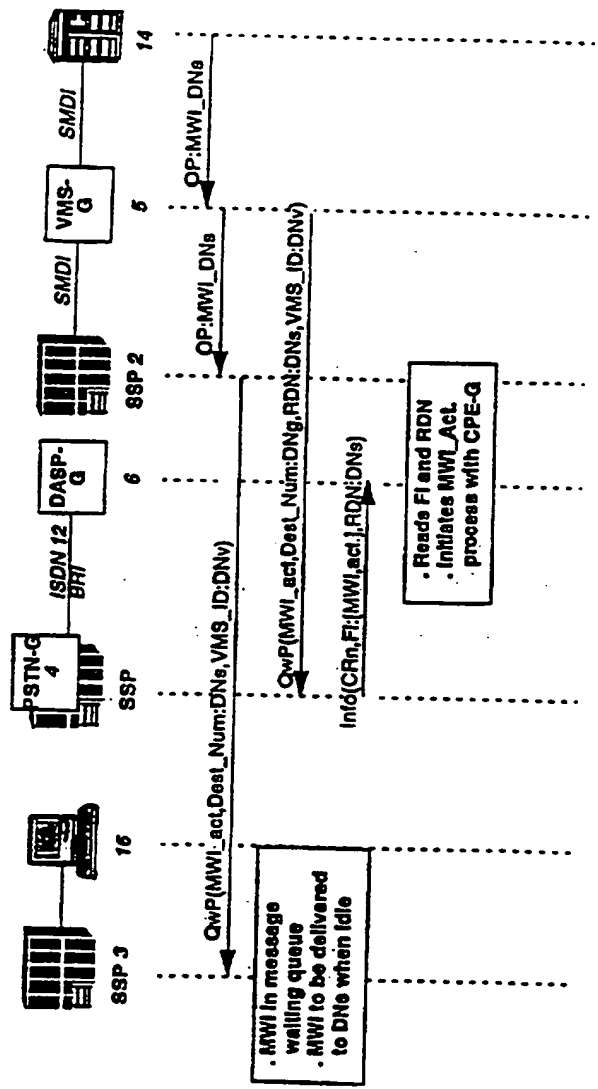
FIGURE 4
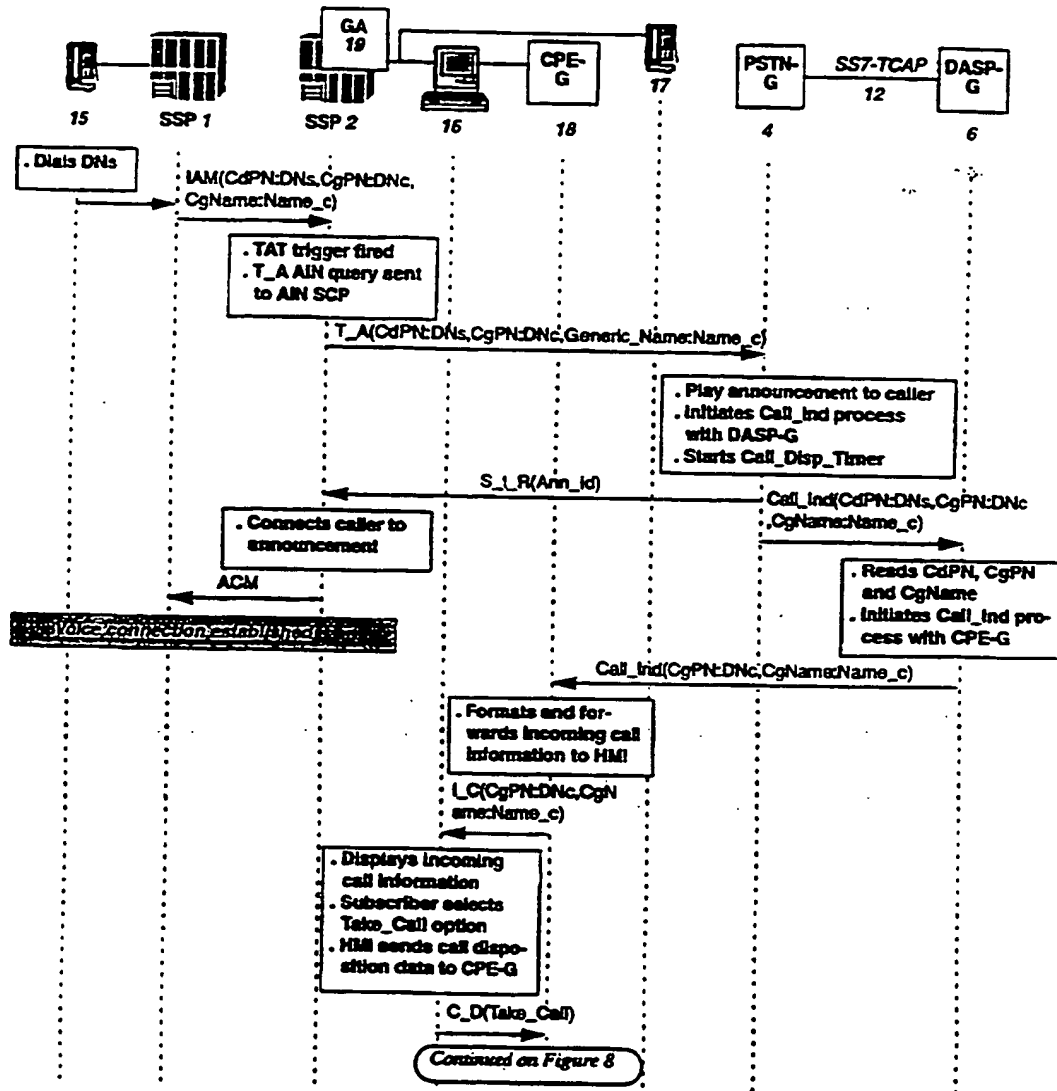
**FIGURE 5**
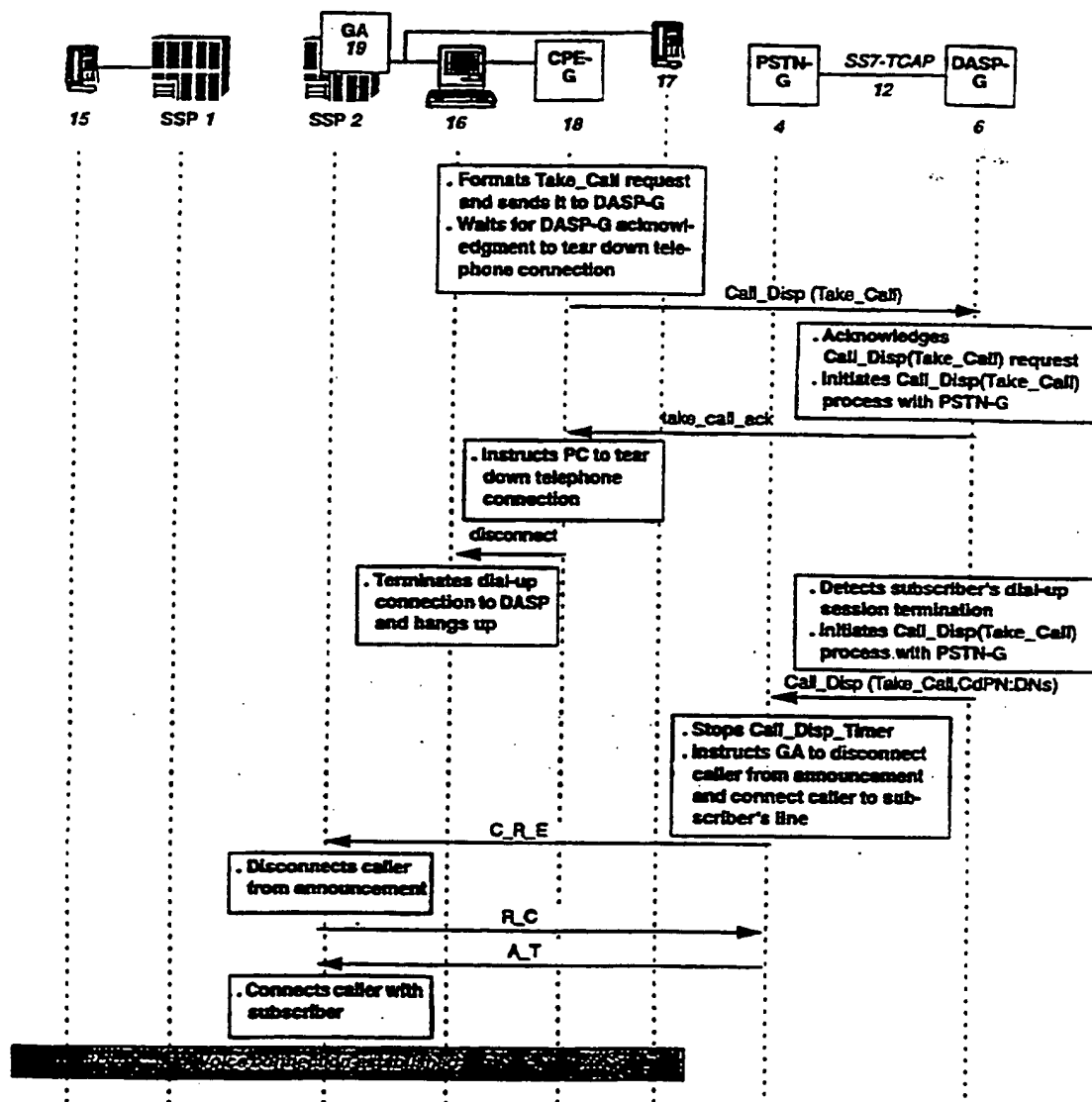
FIGURE 6

FIGURE 7

FIGURE 8

# INTERNATIONAL SEARCH REPORT

### A. CLASSIFICATION OF SUBJECT MATTER
IPC 6   H04M3/42        H04M3/00        H04M3/50

According to International Patent Classification (IPC) or to both national classification and IPC

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6   H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 5 533 110 A (PINARD DEBORAH L  ET AL) 2 July 1996<br>see column 6, line 11 - column 7, line 8<br>see figures 1,8 | 1,2,6,8, 12 |
| Y | "WORKSTATION COMMUNICATIONS SYSTEM" IBM TECHNICAL DISCLOSURE BULLETIN, vol. 37, no. 9, 1 September 1994, pages 101-104, XP000473347<br>see the whole document | 3-5 |
| Y | WO 95 18501 A (GTE LABORATORIES INC) 6 July 1995<br>see the whole document | 3-5 |

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☒ Further documents are listed in the continuation of box C.        ☒ Patent family members are listed in annex.

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| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 16 December 1997 | 30/12/1997 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax: (+31-70) 340-3016 | Megalou, M |

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PCT/CA 97/00570

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication,where appropriate, of the relevant passages | Relevant to claim No. |
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| P,X | WO 97 26749 A (INTERACTIVE TELECOM INC) 24 July 1997 see the whole document | 1-9, 12-20 |
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| A | WO 96 05684 A (QUANTUM SYSTEMS INC) 22 February 1996 see page 6, line 5 - page 9, line 29 | 1-20 |
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| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
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